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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,428	08/14/2001	Hong-Kyu Park	B-4264PCT	9806

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EXAMINER	
KUHAR, ANTHONY J	
ART UNIT	PAPER NUMBER
1754	

DATE MAILED: 08/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/913,428	PARK ET AL.	
	Examin r	Art Unit	
	Anthony J Kuhar	1754	

-- Th MAILING DATE of this communication appears on the cov r she t with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/26/03 in paper no. 8* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1, 4, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang '890.

Column 1, lines 26-30 teach removing an electrolytic manganese dioxide (EMD) deposit from an anode, and crushing and grinding the deposit. Official notice is taken that the taught crushing and grinding supplies heat energy due to friction from the crushing and grinding. The EMD product is then heat treated.

Claims 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Mellors '059.

Column 4, lines 9-13 teach grinding, rolling, or blending a manganous salt and alkali metal permanganate. Official notice is taken that the taught grinding, rolling, and blending supplies heat energy due to friction from the grinding, rolling, and blending.

Claims 1, 2, 4, 5, 14, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Sheargold '679.

Sheargold '679 teaches in column 5, lines 34-45 mixing LiOH or $LiNO_3$ with either electrolytically or chemically prepared MnO_2, Mn_2O_3, or Mn_3O_4. The mixture is mixed in a vibratory mill, jet mill, or ball mill. Column 5, lines 50-55 teach the mixture is sent to a horizontal calciner with a rotating screw (which would apply pressure to the mixture). Thus, heat and mechanical treatment are delivered simultaneously. Column 5, lines 10-12 teach the product suitable for a cathode in an electrochemical cell.

Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 11343120.

JP 11343120 teaches mixing a manganese oxide lithium powder with a lithium compound and compression molding the mixture. The molding is then fired. Thus, the compression molding and firing step meets the limitation of simultaneous mechanical and heat energy.

Claims 1, 2, 4, 5, 10, 14, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Manev '699.

Manev '699 teaches in example 1 grinding chemical grade MnO_2. Official notice is taken that the taught grinding supplies heat energy due to friction from the grinding. LiOH is added to form a lithium manganese oxide spinel. Manev teaches the use of the resulting lithium manganese oxide spinel in the positive electrodes of secondary lithium cells (see the abstract).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4, 5, 8, 9, 10, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manev '699.

Manev '699 teaches in example 1 grinding chemical grade MnO_2. Official notice is taken that the taught grinding supplies heat energy due to friction from the grinding. LiOH is added to form a lithium manganese oxide spinel. Manev teaches the use of the resulting lithium manganese oxide spinel in the positive electrodes of secondary lithium cells (see the abstract). Manev '699 does not disclose that a shape without edge parts is made from angular shaped manganese compound. However, since the process steps of Manev are the same as that instantly claimed, it appears that a shape without edge parts would be formed.

Claims 1, 2, 4-9, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Howard '477 in view of Schulz '030.

Howard '477 teaches mixing reactants in various mixing apparatus including ball mills and high shear mixers. Reactants include lithium and manganese in the form of their oxides or decomposable salts such as nitrates, carbonates, hydroxides, and carboxylates. Manganese oxide as Mn_2O_3 is taught in column 5. Then, they are sent to a reactor and heated to 550 C to 900 C. The examples teach the temperatures are ramped, thus the reactor is heated to 50 to 200 C for some period of time, which meets applicant's claim of 5 min to 5 hours since the heat-up rate is 1-2 degrees C in the examples. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to select the portion of the prior art's range which is within the range of applicant's claims because it has been held to be obvious to select a value in a known range by optimization for the best results, see In re Boesch, 205 USPQ 215.

Howard '477 does not disclose what force is applied to the reactants during intimate mixing; however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the optimum force to apply to the reactants in view of lack of unexpected results because it is not inventive to determine the optimum or workable range which only requires routine experimentation, see In re Boesch, 205 USPQ 215.

Howard '477 also does not disclose mixing takes place simultaneously with heating; however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the mixing and heating steps because Schulz '030 teaches that simultaneous grinding and heating reduces the amount of energy required if grinding and heating separately, and structural defects such as holes, dislocations, and internal strain are avoided in a manganese compound (see column 3, lines 5-25 and column 5, lines 12-22). Howard '477 does not disclose that a shape without edge parts is made from angular shaped manganese compound. However, since the process steps of Howard are the same as that instantly claimed, it appears that a shape without edge parts would be formed.

Claims 1-2, 8-9, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manthiram '755 in view of Schulz '030.

Manthiram '755 teaches in column 2, line 64 to column 3, line 6 mixing, blending, stirring, vibrating, shaking, or agitating a mixture of compounds which includes lithium hydroxide and manganese acetate. In column 3, lines 12-13, the precipitate is heated to 500 C at a rate of 1 C /minute to 10 C/minute. Manthiram '755 does not disclose mixing takes place simultaneously with heating; however, it would have been obvious to one of ordinary skill in the

art at the time the invention was made to combine the mixing and heating steps because Schulz '030 teaches that simultaneous grinding and heating reduces the amount of energy required if grinding and heating separately, and structural defects such as holes, dislocations, and internal strain are avoided in a manganese compound (see column 3, lines 5-25 and column 5, lines 12-22). Manthiram '755 does not disclose that a shape without edge parts is made from angular shaped manganese compound. However, since the process steps of Manthiram are the same as that instantly claimed, it appears that a shape without edge parts would be formed.

Claims 1-5, 8-9, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christian '257 in view of Schulz '030.

Christian '257 teaches in column 4 forming a reaction mixture of manganese dioxide and a lithium salt and subjecting it to a mechanical activation process. Column 6 teaches the mechanical activation process is used to promote or active a chemical reaction by applying mechanical energy to the reaction mixture. It also discloses that electrolytic manganese dioxide or chemical manganese dioxide can be used. Column 4, lines 42-43 teach the product can be used in the cathode of a primary electrochemical cell. Column 4, line 67 to column 5, line 1 teach a subsequent hat treatment between 350 C and 420 C. Christian '257 does not disclose mixing takes place simultaneously with heating; however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the mixing and heating steps because Schulz '030 teaches that simultaneous grinding and heating reduces the amount of energy required if grinding and heating separately, and structural defects such as holes,

dislocations, and internal strain are avoided in a manganese compound (see column 3, lines 5-25 and column 5, lines 12-22).

Column 5, lines 1-4 teach the heat treated lithiated manganese dioxide can include from 0.1 to 1.5 wt % lithium. Thus, it appears from 0-20 % lithium based on manganese compound is used in the reaction mixture. Christian does not disclose that a shape without edge parts is made from angular shaped manganese compound. However, since the process steps of Christian are the same as that instantly claimed, it appears that a shape without edge parts would be formed.

Claims 1, 2, 4, 5, 8, 9, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheargold '679.

Sheargold '679 teaches in column 5, lines 34-45 mixing LiOH or $LiNO_3$ with either electrolytically or chemically prepared MnO_2, Mn_2O_3, or Mn_3O_4. The mixture is mixed in a vibratory mill, jet mill, or ball mill. Column 5, lines 50-55 teach the mixture is sent to a horizontal calciner with a rotating screw (which would apply pressure to the mixture). Thus, heat and mechanical treatment are delivered simultaneously. Column 5, lines 10-12 teach the product suitable for a cathode in an electrochemical cell. Sheargold does not disclose that a shape without edge parts is made from angular shaped manganese compound. However, since the process steps of Sheargold are the same as that instantly claimed, it appears that a shape without edge parts would be formed.

Claims 1, 2, 4-9, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugeno '646 in view of Schulz '030.

Column 2, line 66 to column 3, line 8 of Sugeno '646 teach combining a manganese source and a lithium source is heat processed at 450 C or below and then in a second processing step the mixture is crushed, mixed, and subjected to thermal treatment at 650 C to 780 C. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to select the portion of the prior art's range of 450 C or below which is within the range of applicant's claims because it has been held to be obvious to select a value in a known range by optimization for the best results, see In re Boesch, 205 USPQ 215. The examples teach heat treatment times of 2 and 3 hours. Sugeno does not disclose what force is created on the reactants when they are being mixed or crushed. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the optimum force to to impose on the reactants, if not already inherently present, because it is not inventive to determine the optimum or workable range which only requires routine experimentation, see In re Boesch, 205 USPQ 215. Column 6 teaches the manganese compound may be chemical or electrolytic manganese dioxide, dimanganese trioxide, and trimanganese tetroxide. The lithium compounds can include lithium hydroxide or lithium nitrate.

Sugeno '646 does not disclose mixing takes place simultaneously with heating; however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the mixing and heating steps since because Schulz '030 teaches that simultaneous grinding and heating reduces the amount of energy required if grinding and heating separately, and structural defects such as holes, dislocations, and internal strain are avoided in a manganese compound (see column 3, lines 5-25 and column 5, lines 12-22). Column 9, lines 29-33 teach the lithium-manganese product is suitable as a cathode in a lithium secondary battery. Sugeno

does not disclose that a shape without edge parts is made from angular shaped manganese compound. However, since the process steps of Sugeno are the same as that instantly claimed, it appears that a shape without edge parts would be formed.

Claims 1, 2, 4, 5, 8, 9, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 08102323 in view of Schulz '030.

JP 08102323 teaches using $LiOH*H_2O$ and Mn_2O_3 as a raw material and mixing and grinding the raw material and then heat treating at 700 to 1000 C in paragraph 10. Paragraph 13 teaches using the Li-Mn compound formed in a cathode of a rechargeable lithium-ion battery. JP 08102323 does not disclose grinding takes place simultaneously with heating; however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the mixing and heating steps because Schulz '030 teaches that simultaneous grinding and heating reduces the amount of energy required if grinding and heating separately, and structural defects such as holes, dislocations, and internal strain are avoided in a manganese compound (see column 3, lines 5-25 and column 5, lines 12-22). JP 08102323 does not disclose that a shape without edge parts is made from angular shaped manganese compound. However, since the process steps of JP 08102323 are the same as that instantly claimed, it appears that a shape without edge parts would be formed.

Claims 1, 2, 4-9, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 01263547 in view of Schulz '030.

JP 01263547 teaches in the English language abstract crushing a lithium compound which can be lithium hydroxide and a manganese compound, which can be manganese oxide, mixing them, and applying a heat treatment of 200 C or above for one hour. JP 01263547 does not disclose crushing takes place simultaneously with the heating; however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the mixing and heating steps because Schulz '030 teaches that simultaneous grinding and heating reduces the amount of energy required if grinding and heating separately, and structural defects such as holes, dislocations, and internal strain are avoided in a manganese compound (see column 3, lines 5-25 and column 5, lines 12-22). JP 01263547 does not disclose that a shape without edge parts is made from angular shaped manganese compound. However, since the process steps of JP 01263547 are the same as that instantly claimed, it appears that a shape without edge parts would be formed.

Claims 1, 2, and 4-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000294239 in view of Sugeno '646 and further in view of Schulz '030.

Paragraph 19 of JP 2000294239 teaches mixing a lithium raw material such as lithium hydroxide or lithium nitrate with electrolytic manganese dioxide. Paragraph 20 teaches grinding the electrolytic manganese dioxide after neutralization with lithium hydroxide (e.g. after the electrolytic manganese dioxide is synthesized) by various types of granulation. Then it is calcined at 600 to 1000 C for 5-20 hours (see paragraph 21). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because

overlapping ranges have been held to be a prima facie case of obviousness, in re Malagari, 182 USPQ 549. Paragraph 22 teaches the use of the product in a positive electrode in an electrolytic battery.

JP 2000294239 does not teach heating the electrolytic manganese dioxide as it is being ground. However, column 2, line 66 to column 3, line 8 of Sugeno '646 teach both heating and crushing of manganese dioxide. Column 6 teaches the manganese compound may be chemical or electrolytic manganese dioxide, dimanganese trioxide, and trimanganese tetroxide. Sugeno teaches the heat treatment may be performed at 450 C or below. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to select the portion of the prior art's range which is within the range of applicant's claims because it has been held to be obvious to select a value in a known range by optimization for the best results, see In re Boesch, 205 USPQ 215. The examples in Segeno teach heating times of 2 or 3 hours. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to also employ heating during the crushing step of JP 2000294239 because Sugeno '646 teaches in column 5, lines 50-55 that by heating and crushing, a lithium-manganese oxide material may be obtained with homogenous material characteristics and lattice planes with regularity. One of ordinary skill of the art at the time the invention was made would have been motivated to do this because column 16 of Sugeno teaches the above described characteristics result in superior cycle properties and discharge load properties.

JP 2000294239 and Sugeno '646 does not disclose crushing takes place simultaneously with the heating; however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the mixing and heating steps because Schulz '030

teaches that simultaneous grinding and heating reduces the amount of energy required if grinding and heating separately, and structural defects such as holes, dislocations, and internal strain are avoided in a manganese compound (see column 3, lines 5-25 and column 5, lines 12-22).

JP 2000294239 does not disclose that a shape without edge parts is made from angular shaped manganese compound. However, since the process steps of JP 2000294239 are the same as that instantly claimed, it appears that a shape without edge parts would be formed.

Response to Arguments

Applicant's arguments filed 6/26/03 in paper no. 8 have been fully considered but they are not persuasive. Applicant argues Wang '890 describes grinding and heat treating EMD deposit but these processes are not conducted simultaneously. However, the examiner contends that in the process of grinding alone, even without the heat treatment, mechanical and heat energy is applied. The heat energy comes from the friction created between the particles in the process of grinding.

Applicant argues Sheargold '679 and JP '120 relate to heat treating a mixture of manganese compound and lithium compound to prepare lithium manganese oxide spinel whereas the claims apply mechanical and heat energy to a manganese compound. JP '120 meets these claim limitation sin that manganese oxide and lithium compound is compression molded. In compression molding, powder is placed into cavities in a press and a force is applied while applying high temperatures. Thus, the limitation of simultaneous mechanical and heat treatment is met. In addition, the claims recite that this mechanical force and heat energy is applied to a

manganese compound. Since the claims are open ended, the manganese oxide and lithium compound in JP '120 would meet the limitation of "manganese compound".

In Sheargold '679, a mixture of lithium compound and manganese compound is mixed in a vibratory mill, jet mill, or ball mill. Then, the mixture is sent to a horizontal calciner with a rotating screw. The horizontal calciner applies a mechanical force in that the mixture is compressed and sheared as the rotating screw moves it through the barrel of the calciner. Heat is added to the barrel in order to calcine the mixture. Thus, the limitation of simultaneous heat and mechanical treatment is met. The claims do not limit the mechanical and chemical treatment to solely the manganese compound.

Applicants do not understand how grinding leads removing "defects in particles of said manganese compound". In applicant's example 1 shear stress and compression stress is applied to the particles. In the process of grinding, shear stress and compression stress are both present. Thus, grinding would, in fact, remove the defects since the same forces are applied.

Similarly, in Mellors '059 and Manev '699, the taught "grinding" applies both mechanical and heat treatment and would remove the defects in the particles as explained above.

Applicants argue that the references Howard '477, Manthiram '755, Christian '257, Sheargold '679, Sugeno '646, JP '323, and JP '547 teach heat treating of manganese compound and lithium compound. However, this still meets the claim limitation of "manganese compound", even if a lithium compound is present.

Applicant argues the mixing of lithium and manganese compound and heat treating is the conventional method for forming the spinel compound. The lithium rapidly diffuses into the manganese compound. Lithium manganese spinel is formed without removing impurities in the

manganese compound. However, examiner contends that the rejections in the previous office action state "grinding" of the manganese and/or lithium compounds rather than "mixing". In the process of grinding, mechanical and heat treatment is simultaneously applied.

Applicants argue simultaneous mechanical and heat treatment cannot be applied to both lithium and manganese compound. Thus, applicant should exclude the presence of the lithium compound during the simultaneous heat and mechanical treatment in the claims.

Applicant further argues that Schulz '030 cannot be used to modify the references because Schultz '030 pertains to a metal powder mixture comprising an alloy. Examiner contends that the metal powder mixture is mechanically and heat treated to form an alloy and not necessarily that the powder itself comprises an alloy.

Applicant argues that the alloy is in a different technical field as the invention applying simultaneous mechanical and heat energy to a manganese compound. Examiner disagrees because the manganese/lithium spinel is similar to the alloy in Schultz '030 because both contain metals as their principle components. Furthermore, the alloy is a mixture of metals, where not all of the metals are chemically bonded to each other. The spinel is similar in that spinels have a non-uniformity of compositions. Thus, each compound (combination of lithium, manganese, and oxygen) forms a mixture, similar to the alloy taught in Schultz '030. Since the alloy and the spinel is composed of a mixture of various metal-containing entities, one of ordinary skill in the art would expect to encounter the same problems in the final product, e.g. holes, dislocations, and internal strain. Indeed, this is the case. Thus, alloys and spinel compounds are not in different technical fields because the final product of each has the same defects due to their similar nature.

Applicant explains how the mechanical force of the invention controls the aggregation of micro particles and their shapes. Grinding is to decrease the size of the particle in order to uniformly mix the manganese compound with the lithium compound. Thus, the mechanical force is distinguished from the grinding in the cited references. Again, examiner disagrees in that "grinding" falls under the broad limitation of "mechanical force" to begin with, and furthermore, grinding applies the same shear and compressive stresses as the mechanofusion mixer in applicant's examples. Thus, the grinding would remove the defects to some degree in addition to decreasing the size of the particle.

The examiner contends that the references cite all of the claim limitations as claimed above. Furthermore, there is motivation to combine Schultz '030 with the various references and there is a reasonable expectation of success. The alloys have the same problems with defects as the manganese/lithium compounds due to their similar nature, thus there is the motivation to combine. The Schultz reference teaches when grinding is carried out at high temperatures, the alloys have less intrinsic defects. Thus there is a reasonable expectation of success.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J Kuhar whose telephone number is 703-305-7095. The examiner can normally be reached on 8:45 am - 5:15 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stan Silverman can be reached on 703-308-3837. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

AK

AK

STEVEN BOS
PRIMARY EXAMINER
GROUP 1100